Department of
Pharmacology and Toxicology

2001
Annual Report
Department of Pharmacology and Toxicology
# TABLE OF CONTENTS

I. DEPARTMENT HIGHLIGHTS 1

II. MISSION STATEMENT 4

III. FACULTY/RESEARCH DESCRIPTIONS (PRIMARY AND JOINT APPOINTMENTS) 5

IV. PERSONNEL 12

V. PUBLICATIONS (SALARIED FACULTY) 19

VI. ABSTRACTS (SALARIED FACULTY AND STAFF) 27

VII. INVITED SCIENTIFIC PRESENTATIONS AND SEMINARS (SALARIED FACULTY) 36

VIII. RESEARCH GRANTS AND CONTRACTS (SALARIED FACULTY) 40

IX. TEACHING 54

X. SERVICE 55

XI. HONORS AND AWARDS 55

XII. STANDING COMMITTEES 56

INDIVIDUAL FACULTY REPORTS

Frederick W. Benz  
Theresa S. Chen  
Paul N. Epstein  
David Gozal  
Evelyne Gozal  
David W. Hein  
Harrell E. Hurst  
Y. James Kang  
W. Glenn McGregor  
Steven R. Myers  
Donald E. Nerland  
William M. Pierce, Jr.  
Peter P. Rowell  
Zhao-hui (Joe) Song  
J. Christopher States  
Leonard C. Waite  
Walter M. Williams
I. Department Highlights

The Department of Pharmacology and Toxicology continued its efforts to increase its role in graduate education and research as outlined in its strategic plan. Some highlights of the year included:

- **Dr. Larry Carr** was honored and appointed Professor Emeritus upon his retirement as Professor of Pharmacology and Toxicology and Associate Dean for Curriculum in September. Larry provided outstanding contributions to the University of Louisville for over 30 years. He was first appointed assistant professor in 1969, and was promoted to associate professor in 1975 and full professor in 1981. In 1987, he began his additional appointment as associate dean for curriculum in the School of Medicine. A number of curricular reforms were initiated during his tenure as associate dean and he set the stage for several more to come. He directed several important courses, including the medical pharmacology course from 1981 to 1997. Seven students completed their MS or PhD degrees in his laboratory. Larry continued to be active in research as professor emeritus.

- Several new faculty members received joint appointments in the Department of Pharmacology and Toxicology bringing additional expertise to our graduate, teaching, and research programs. Descriptions of their research activities are included in the faculty listing later in this report. In addition, **Abbas Parsian, PhD**, Associate Professor in the Birth Defects Center was appointed as faculty associate. The new faculty receiving joint appointments in 2001 were:
  - Shirish Barve, PhD, Associate Professor
  - Haribabu Bodduluri, PhD, Associate Professor
  - David E. Clouthier, PhD, Assistant Professor
  - Craig J. McClain, MD, Professor
  - David J. Tollerud, MD, Clinical Professor
  - Yang Wang, MD, PhD, Assistant Professor

- The medical pharmacology course, under the direction of **Dr. Mike Williams**, continued to be one of the most highly rated courses by the medical students. The Department continued to incorporate more clinical problem based learning and small group teaching into the course format.

- The annual William J. Waddell Seminar, honoring Professor and Chair Emeritus Dr. William J. Waddell was initiated in 2001. The first speaker was Dr. Victor J. Feron, Toxicology Division, TNO Nutrition and Research, The Netherlands.

- One of our most distinguished alumni, Dr. Karl Csaky, Head of Gene Therapy, Laboratory of Immunology, National Eye Institute, NIH, presented the second annual K.C. Huang Memorial Seminar.

- The Department submitted its first NIEHS training grant in May. The priority score was promising and a revised proposal was submitted in 2002.
• The new Peter K. Knoefel Conference room was completed and was used extensively for meetings and seminars.

![Graph of Department of Pharmacology and Toxicology Graduate Students](image)

• Eight students received graduate degrees in 2001. Twelve new graduate students entered the program. The size of the graduate program continues to show steady growth.

![Graph of Number of Graduates](image)

• The number of graduates of our program over the most recent five-year period has more than doubled compared to the previous five-year period.
• Published manuscripts over the most recent five-year period are up over fourfold.

• Abstracts over the most recent five-year period are up over sixfold.

• The number of funded research grants in which salaried faculty serve as principal investigator continues to increase. The number is up almost threefold over the baseline in 1996.
II. Mission Statement

The Department of Pharmacology and Toxicology is committed to academic excellence and to the attainment of regional, national, and international recognition for the quality of its educational, research, and service activities. Guided by the University of Louisville Challenge for Excellence to become a preeminent metropolitan research university, the Department Strategic Plan will focus on accomplishment of five broad objectives:

- Provide instruction in pharmacology and toxicology of the highest quality for the education and preparation of medical, dental, nursing, and other health care professional students. Emphasis will be placed on the fundamental principles necessary for life-long learning and the essential knowledge required for rational, effective, and safe use of drug therapy.

- Advance biomedical knowledge through active contribution to high quality research and other scholarly activities, particularly in pharmacology and toxicology and other areas of focus within the University of Louisville Challenge for Excellence.

- Provide high quality research and educational experiences in pharmacology and toxicology for the education and training of future biomedical scientists who can provide and advance biomedical education, research, and service.

- Provide instruction of the highest quality in pharmacology and toxicology that is appropriate for students at the undergraduate, graduate, and postgraduate levels.

- Provide high quality service to the School of Medicine, the Health Sciences Center, the University, the people of Louisville and the surrounding region, the Commonwealth of Kentucky, professional organizations, the nation, and the world.
III. Faculty/Research Descriptions (Primary and joint appointments)

George R. Aronoff, M.D. (Indiana University)
Professor

Effects of uremia on drug disposition in humans; drug nephrotoxicity and renal drug metabolism, artificial intelligence.

Shirish Barve, Ph.D. (University of Kentucky)
Associate Professor

Effects of alcohol on molecular mechanisms of cytokine action, gene expression and liver injury.

Frederick W. Benz, Ph.D. (University of Iowa)
Professor

Biochemical pharmacology and toxicology; biochemical mechanisms of drug action and toxicity.

Haribabu Bodduluri (Indian Institute of Science)
Associate Professor

Signal transduction and chemoreceptors. Role of leukotriene receptors in inflammation and host response.

Laurence A. Carr, Ph.D. (Michigan State University)
Professor Emeritus

Biochemical neuropharmacology; functional role of brain biogenic amines; interaction of brain neurotransmitters with peripheral immune system.
Theresa S. Chen, Ph.D. (University of Louisville)
Professor

Biochemical toxicology; role of glutathione in aging toxicology; general and specific toxicity of environmental pollutants.

David E. Clouthier, Ph.D. (University of Texas Southwestern)
Assistant Professor

Function of endothelin-A receptor signaling during craniofacial and cardiovascular development. Mouse models of human birth defect syndromes.

Nicholas A. Delamere, Ph.D. (University of East Anglia)
Professor

Electrolyte transport mechanisms in epithelia; second messenger regulation of aqueous humor secretion processes; the role of ion transport mechanisms in preserving transparency of the ocular lens.

John W. Eaton, Ph.D. (University of Michigan)
James Graham Brown Professor

Biomaterial-mediated inflammation and fibrosis; sub-endothelial glycochelates, transition metals and diabetic neuropathy; cellular and molecular basis of iron toxicity

Paul N. Epstein, Ph.D. (Baylor College of Medicine)
Professor
Carol B. McFerran Endowed Chair in Pediatric Diabetes Research

Development of transgenic models for the study of causes and complications of diabetes, and the production of mice that are more resistant to diabetes by introducing genes to protect from oxidative stress.
David Gozal, M.D. (Hebrew University of Jerusalem)
Professor
Children’s Hospital Foundation Pediatric Research Chair

Signal transduction mechanisms underlying ventilatory response to hypoxia; neuronal adaptions to intermittent hypoxia: growth factors, intracellular signaling, and genomic implications.

Evelyne Gozal, Ph.D. (University of Southern California)
Assistant Professor

Signal transduction pathways involved in neuronal cell survival and neuronal cell death during hypoxia; cellular mechanisms underlying brain adaptation to chronic and intermittent hypoxia; identification of the kinases and transcription factors activated by hypoxia, leading to gene induction and to adaptation to oxygen deprivation.

David W. Hein, Ph.D. (University of Michigan)
Peter K. Knoefel Professor and Chairman

Molecular pharmacogenetics; molecular epidemiology; functional genomics; genetic predisposition to chemical carcinogenesis and drug toxicity; molecular genetics; environmental toxicology.

Harrell E. Hurst, Ph.D. (University of Kentucky)
Professor

Analytical toxicology and kinetics with emphasis on qualitative and quantitative techniques, including gas chromatography, high pressure liquid chromatography and GC/mass spectrometry.

Y. James Kang, Ph.D. (Iowa State University)
Professor

Molecular and cardiac toxicology. Transgenic and knock-out animal models to study oxidative injury and antioxidant systems in the heart. Biological functions and toxicological significance of metallothionein and glutathione in vivo.
Craig J. McClain, M.D. (University of Tennessee - Memphis)
Professor

Role of cytokines in liver injury and other forms of hepatotoxicity, interactions with nutrition and toxicology.

W. Glenn McGregor, M.D. (University of Michigan)
Associate Professor

Molecular biology of DNA damage, repair and mutagenesis; molecular mechanisms of mutagenesis induced by model carcinogens; molecular mechanisms of replication of DNA templates containing well-defined site specific damage.

Donald M. Miller, M.D., Ph.D. (Duke University)
Professor
James Graham Brown Foundation Chair

Molecular and clinical oncology; modulation of oncogene expression; triplex DNA based gene therapy; treatment of melanoma.

Frederick N. Miller, Ph.D. (University of Cincinnati)
Professor

Macromolecular permeability in the microcirculation.

Steven R. Myers, Ph.D. (University of Kentucky)
Associate Professor

Drug metabolism, metabolism of xenobiotics and chemical carcinogens; use of hemoglobin as biomarker in exposure to xenobiotics.
Donald E. Nerland, Ph.D. (University of Kansas)  
Professor  
Biochemical toxicology; metabolism of drugs and environmental pollutants.

William M. Pierce, Jr., Ph.D. (University of Louisville)  
Professor  
Drug design and organ targeting strategies; novel drugs for treatment of osteoporosis; mechanisms of bone formation and resorption; proteomic analysis and study of structure and function of biomolecules and xenobiotics using mass spectrometry.

M. Michele Pisano, Ph.D. (Thomas Jefferson University)  
Associate Professor  
Molecular development toxicology; gene-environment interactions in normal and abnormal embryonic development; growth factor directed cellular signal transduction in embryonic cell growth and differentiation.

George C. Rodgers, Jr. M.D., Ph.D. (Yale University, Ph.D.; State University of New York, M.D.)  
Professor  
Toxicokinetics in drug overdoses and pharmacokinetics in pediatric disease states.

Peter P. Rowell, Ph.D. (University of Florida)  
Professor  
Neuropharmacology; effect of drugs on brain neurotransmitters and receptors.
Zhao-Hui (Joe) Song, Ph.D. (University of Minnesota)
Assistant Professor

Molecular pharmacology; cloning and functional characterization of novel G protein-coupled receptors; molecular mechanisms of action and structure-function relationships of cannabinoid (marijuana) receptors.

J. Christopher States, Ph.D. (Albany Medical College)
Associate Professor

Molecular biology and molecular genetics of DNA damage and repair in humans

Janice E. Sullivan, M.D. (University of Minnesota)
Assistant Professor

Clinical pharmacology with a focus on developmental pharmacokinetics and pharmacodynamics.

David J. Tollerud, M.D. (Mayo Medical School; M.P.H., Harvard University)
Clinical Professor

Occupational and Environmental Medicine; Occupational Toxicology; Molecular Epidemiology

Leonard C. Waite, Ph.D. (University of Missouri)
Professor

Endocrine pharmacology; mechanism of action of hormones; pharmacological modulation of hormone action; mineral homeostasis.
Yang Wang, Ph.D. (University of Toronto)
Assistant Professor

Molecular and cellular regulation of genes implicated in hypoxic/ischemic injury and protection in the cardiovascular system. Current research is focused on (1) molecular regulation of nitric oxide synthase (NOS) genes during hypoxia/ischemia and their roles in cardiovascular protection afforded by ischemic preconditioning and (2) cyclooxygenase-2 (COX-2) pathway: biological roles and molecular regulation in late preconditioning. Gene regulation is investigated at both the gene transcription level and the RNA biology level.

Walter M. Williams, M.D., Ph.D. (University of Louisville)
Professor

Studies of drug elimination (metabolism and excretion).

John L. Wong, Ph.D. (University of California-Berkeley)
Professor

Biological chemistry; molecular dosimetry in environmental health; preparation of monoclonal antibodies in biomarker studies.

Wolfgang Zacharias, Ph.D. (Philipps-University Marburg)
Associate Professor

Ribozymes for gene therapy in rheumatoid arthritis; involvement and roles of cathepsins in oral cancers; gene expression profiling with DNA microarray chip technology
IV. Personnel

Faculty with Primary Appointments

Benz, Frederick W., Professor; Ph.D., Pharmacology, University of Iowa (1970).

Carr, Laurence A., Professor; Ph.D., Pharmacology, Michigan State University (1969).

Chen, Theresa S., Professor; Ph.D., Pharmacology, University of Louisville (1971).

Hein, David W., Peter K. Knoefel Professor and Chair; Ph.D., Pharmacology, University of Michigan (1982).

Hurst, Harrell E., Professor; Ph.D., Toxicology, University of Kentucky (1978).

McGregor, W. Glenn, Associate Professor; M.D., University of Michigan (1976).

Myers, Steven R., Associate Professor; Ph.D., Pharmacology, University of Kentucky (1986).

Nerland, Donald E., Professor; Ph.D., Medicinal Chemistry, University of Kansas (1974).

Pierce, William M., Jr., Professor and Graduate Program Director; Ph.D., Pharmacology and Toxicology, University of Louisville (1981).

Rowell, Peter P., Professor; Ph.D., Pharmacology and Therapeutics, University of Florida (1975).

Song, Zhao-Hui (Joe), Assistant Professor; Ph.D., Pharmacology, University of Minnesota (1992).

States, J. Christopher, Associate Professor; Ph.D., Molecular Biology and Pathology, Albany Medical College/Union University (1980).

Waite, Leonard C., Professor and Vice Chairman; Ph.D., Pharmacology, University of Missouri (1969).

Williams, Walter M., Professor; Ph.D., Pharmacology, University of Louisville (1970); M.D., University of Louisville (1974).
Faculty with Joint Appointments

Aronoff, George R., Professor of Medicine, and Pharmacology and Toxicology; M.D., Indiana University (1975).

Barve, Shirish, Associate Professor of Medicine (Gastroenterology), and Pharmacology and Toxicology; Ph.D., University of Kentucky (1990).

Bodduluri, Hari, Associate Professor of Pathology and Laboratory Medicine, and Pharmacology and Toxicology; Ph.D., Indian Institute of Science (1983).

Clouthier, David, Assistant Professor of Molecular, Cellular and Craniofacial Biology, and Pharmacology and Toxicology; Ph.D., University of Texas Southwestern Medical Center (1994).

Delamere, Nicholas A., Professor of Ophthalmology and Visual Sciences, and Pharmacology and Toxicology; Ph.D., Membrane Physiology and Biophysics, University of East Anglia, Norwich, England (1976).

Eaton, John W., James Graham Brown Professor of Cancer Biology, Department of Medicine, and Professor of Pharmacology and Toxicology; Ph.D., Biological Anthropology and Human Genetics, University of Michigan (1969).

Epstein, Paul N.*, Carol B. McFerran Chair in Pediatric Diabetes Research and Professor of Pediatrics, and Pharmacology and Toxicology; Ph.D., Pharmacology, Baylor College of Medicine (1981).

Gozal, David*, Children’s hospital Foundation Pediatric Research Chair, Professor of Pediatrics, and Pharmacology and Toxicology; M.D., Hebrew University of Jerusalem, Hadassah Medical School (1979).

Gozal, Evelyne*, Assistant Professor of Pediatrics, and Pharmacology and Toxicology; Ph.D., Toxicology, University of Southern California (1997).

Kang, Y. James*, Professor of Medicine, and Pharmacology and Toxicology; Ph.D., Cell Biology and Zoology, Iowa State University (1989).

McClain, Craig J., Professor of Medicine (Gastroenterology), and Pharmacology and Toxicology; M.D., University of Tennessee-Memphis (1972).

Miller, Donald M., James Graham Brown Professor of Oncology, and Professor of Pharmacology and Toxicology; M.D., Duke University (1973); Ph.D., Biochemistry, Duke University (1973).

Miller, Frederick N., Professor of Physiology and Biophysics, and Pharmacology and Toxicology; Ph.D., Pharmacology, University of Cincinnati (1971).
Pisano, M. Michele, Associate Professor of Molecular, Cellular and Craniofacial Biology, and Pharmacology and Toxicology; Ph.D., Anatomy, Thomas Jefferson University (1985).

Rodgers, George C., Jr., Professor of Pediatrics, and Pharmacology and Toxicology; Ph.D., Organic Chemistry, Yale University (1964); M.D., State University of New York (1975).

Sullivan, Janice E., Associate Professor of Pediatrics, and Assistant Professor of Pharmacology and Toxicology; M.D., University of Minnesota (1988).

Tollerud, David, Clinical Professor of Medicine (part-time), and Professor of Pharmacology and Toxicology; M.D., Mayo Medical School (1978); M.P.H., Harvard Medical School (1990).

Wang, Yang, Assistant Professor of Medicine (Cardiology), and Pharmacology and Toxicology; M.D., Jiangxi Medical College (1982); Ph.D., University of Toronto (1993).

Wong, John L., Professor of Chemistry, and Pharmacology and Toxicology; Ph.D., Chemistry, University of California at Berkeley (1966).

Zacharias, Wolfgang, Associate Professor of Medicine (Oncology), and Pharmacology and Toxicology; Ph.D., Biochemistry, Philipps-University, Marburg, Germany (1980).

* Partial salary from Department of Pharmacology and Toxicology

**Faculty with Associate Appointments**

Bhatnagar, Aruni, Professor of Medicine; Ph.D., Chemistry, University of Kanpur, India (1986).

Brier, Michael E., Associate Professor of Medicine; Ph.D., Industrial and Physical Pharmacy, Purdue University (1986).

Edmonds, Harvey L., Professor of Anesthesiology; Ph.D., Pharmacology, University of California at Davis (1974).

Jumblatt, James E., Professor of Ophthalmology and Visual Sciences; Ph.D., Biological Sciences, Columbia University (1975).

Parsian, Abbas, Associate Professor of Molecular, Cellular and Craniofacial Biology; Ph.D., Western Michigan University (1986).

Rigor, Benjamin, Professor of Anesthesiology; M.D., University of the East Ramon Magsaysay Memorial Medical Center (1962).

Schurr, Avital, Professor of Anesthesiology; Ph.D., Biochemical Pharmacology, Ben Gurion University, Beer Sheva, Israel (1977).
Faculty with Emeritus Appointments


Dagirmanjian, Rose, Professor Emerita; Ph.D., University of Rochester (1960).

Darby, Thomas D., Adjunct Professor Emeritus; Ph.D., Medical College of South Carolina (1957).

Jarboe, Charles H., Professor Emeritus; Ph.D., University of Louisville (1956).

Scharff, Thomas G., Professor Emeritus; Ph.D., University of Rochester (1956).

Waddell, William J., Professor and Chair Emeritus; M.D., University of North Carolina (1955).

Zimmerman, Thom J., Professor of Ophthalmology and Visual Sciences, and Pharmacology and Toxicology; Ph.D., Pharmacology, University of Florida (1976); M.D., University of Illinois (1968). [Emeritus appointment January 1, 2001.]

Faculty with Adjunct Appointments

Friedman, Marvin A., Adjunct Professor of Pharmacology and Toxicology; Ph.D., Massachusetts Institute of Technology (1967).

Gruber, Scott A., Adjunct Associate Professor of Pharmacology and Toxicology; M.D., SUNY Downstate Medical School (1983); Ph.D., University of Minnesota (1991).

Hayes, A. Wallace, Adjunct Professor of Pharmacology and Toxicology; Ph.D., Auburn University (1967).

Holthouser, Michael G., Adjunct Assistant Professor of Pharmacology and Toxicology; M.D., University of Kentucky (1971).

Horowitz, Stuart, Adjunct Assistant Professor of Pharmacology and Toxicology; Ph.D., University of Rochester (1986).

Matyunas, Nancy, Adjunct Instructor of Pharmacology and Toxicology; Pharm.D., University of Utah (1983).

Nicholson, John A., Adjunct Assistant Professor of Pharmacology and Toxicology; D.M.D., University of Louisville (1979); Ph.D., University of Louisville (1968).

Pinhas, Allan R., Visiting Assistant Adjunct Professor of Pharmacology and Toxicology; Ph.D., Cornell University (1980).

Wedlund, Peter A., Adjunct Associate Professor of Pharmacology and Toxicology; Ph.D., Pharmaceutical Sciences, University of Washington (1981).
New Faculty Appointments

Barve, Shirish, Ph.D., Associate Professor, effective March 1, 2001.
Bodduluri, Haribabu, Ph.D., Associate Professor, effective March 1, 2001.
Clouthier, David E., Ph.D., Assistant Professor, effective November 1, 2001.
McClain, J. Craig, M.D., Ph.D., Professor, effective October 1, 2001.
Parsian, Abbas, Ph.D., Associate faculty, effective July 1, 2001.
Tollerud, David J., M.D., M.P.H., Clinical Professor, effective August 1, 2001.
Wang, Yang, M.D., Ph.D., Assistant Professor, effective February 1, 2001.

Staff

Beauerle, Brian, Research Technologist I
Burke, Tom, Research Technologist II
Cai, Jian, Technical Director, Mass Spectrometry Lab
Carpenter, Sharon; Executive Secretary
Doll, Mark; Research Associate
Greca, Edie; Business Manager III
McNeely, Sam, Research Technologist II
Rubin-Teitel, Heddy; Program Assistant III
Smith, Leo, Student Assistant
Smith, Ned; Senior Research Technologist
Spurrier, Alexandra; Student Assistant
Suresh, Karthik; Student Assistant
Tucker, Alison, Lab/Research Technician III
Tucker, Lindsay, Lab/Research Technician III
Xiao, Gong H., Research Associate

Visiting Graduate Students / Faculty

Sook un Kim (Seoul National University College of Medicine, Korea)
Allan Pinhas (University of Cincinnati)
Olga van der Hel (University Medical Centre Utrecht, The Netherlands)
# Graduate Students

<table>
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<tr>
<th>Name</th>
<th>Advisor</th>
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<tr>
<td>Brad Brewer</td>
<td>Peter Rowell</td>
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<td>Cristian Campian</td>
<td>Fred Benz</td>
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<td>Wendy Chang</td>
<td>Theresa Chen</td>
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<td>Hainen Chen</td>
<td>Paul Epstein</td>
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<td>Denise Clark</td>
<td>Glenn McGregor</td>
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<td>Chris Cunningham</td>
<td>Steve Myers</td>
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<td>Laila Elsherif</td>
<td>James Kang</td>
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<td>Xin Fu</td>
<td>Mike Williams</td>
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<td>April Hartford</td>
<td>Nick Delamere</td>
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<td>John Hennion</td>
<td>Rif El-Mallakh</td>
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<td>Misty Holbrook</td>
<td>Evelyne Gozal</td>
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<td>Prachi Hote</td>
<td>Shirish Barve</td>
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<td>Yining Hou</td>
<td>Nick Delamere</td>
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<td>Al (Chip) Jacobs</td>
<td>Mike Brier</td>
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<td>Hana Khaled</td>
<td>Bill Pierce</td>
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<td>Jason Lambert</td>
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<td>Jian Li</td>
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<td>Nina Li</td>
<td>Paul Epstein</td>
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<td>Glenn McGregor</td>
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<td>Carson McCloud</td>
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<td>Tanvi Modi</td>
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<td>Abubakar Naida</td>
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<td>Jason Neale</td>
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<td>Katie Richardson</td>
<td>Shirish Barve</td>
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<td>Clare Shen</td>
<td>Paul Epstein</td>
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<td>Xichun Sun</td>
<td>James Kang</td>
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<tr>
<td>Yue (Cindy) Wang</td>
<td>David Gozal</td>
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<tr>
<td>Nick Watson</td>
<td>Glenn McGregor</td>
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<td>Yu (Janet) Zang</td>
<td>David Hein</td>
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<tr>
<td>Yuanqi Zhu</td>
<td>David Hein</td>
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# Postdoctoral Fellows

- Feng, Wenke
- Jiang, Guo-hui
- Stefan, Mihaela
- Zhao, Shuang
- Zhong, Li-Chun
- Zhou, Dan
New Graduate Students

Chang, Wendy
Cunningham, Chris
Holbrook, Misty
Hote, Prachi
Jefferson, Felicia
Logsdon, Paula
McCloud, Carson
Naida, Abubakar
Richardson, Katie
Wang, Yue (Cindy)
Watson, Nick
Zang, Yu (Janet)

Graduations


V. Publications (salaried faculty)

Papers


5. Feng W and Song ZH (2001) Functional roles of the tyrosine within the NP(X)(n)Y motif and the cysteines in the C-terminal juxtamembrane region of the CB2 cannabinoid receptor. *FEBS Lett.* **501**:166-170.


**Additional Publications of Faculty with Joint Appointments**


VI. Abstracts (salaried faculty and staff)


4. Ye, Gang, Ren, Jun and Epstein PN 2001 Metallothionein Protects Cardiomyocytes from Diabetic Damage. Annual meeting of the American Diabetes Association 692-P.


21. Gozal D, Guo S-Z, Cheng Z, Lipton AJ. Recovery of hypoxic ventilatory response (HVR) following domoic acid lesions of the nucleus of solitary tract (NTS) in the rat. Presented at:

23. Gozal E, Pequignot JM, Pequignot J, Row BW, Guo S-Z, Sachleben LR, Gozal D. Cortical (Cx) and hippocampal (CA1, CA3) changes in tyrosine hydroxylase (TH) expression and catecholamine turnover following 7 days of episodic (EH) or sustained hypoxia (SH) in the rat. Presented at: 31st Annual Meeting of the Society for the Neurosciences, 11-15 November, 2001, San Diego, CA, Vol. 27.


30. Ortiz LA, Lasky JA, Gozal E, Brody AR, Pardo A, Selman M, Ruiz V, Friedman M. Tumor necrosis factor receptor deficiency protects mice from silica-induced lung fibrosis by altering


37. Gozal E, Pequignot JM, Pequignot J, Row BW, Guo SZ, Sachleben LR, Gozal D. Cortical (CX) and hippocampal (Ca1, Ca3) changes in tyrosine hydroxylase (TH) expression and catecholamine turnover following 7 days of episodic hypoxia (EH) or sustained hypoxia (SH) in the rat. Presented at: 31th Annual Meeting of the Society for Neuroscience, November 10-15, 2001, San Diego, CA. Vol 27, abstract # 845.3.


64. Clark, D.R., Zacharias, W., and McGregor, W.G. Specific cleavage of REV1L mRNA by a catalytic ribozyme. Third Annual Midwest DNA Repair Symposium. Indiana University Medical Center, Indianapolis 6/2/01-6/3/01 (platform presentation).


66. Clark, D.R., Zacharias, W., and McGregor, W.G. Strategies to reduce carcinogen-induced mutagenesis: ribozyme-mediated cleavage of REV1L mRNA. Research! Louisville 10/29/01-11/2/01 (Second place winner, Graduate Student Division)


68. Pinorini, M.T. and Myers, S.R. Metabolism of chemical carcinogens via methylation reactions, Toxicologist 54:1, 35, 2001


70. Myers, S.R. Hemoglobin adducts as biomarkers of maternal and fetal tobacco smoke exposure, Toxicologist 55:1, 395, 2001

71. Spinnato, J.A. and Myers, S.R. Metabolism and pharmacokinetics of N-methyl-N-2,4,6-tetranitroaniline (tetryl), Toxicologist 55:1, 447, 2001


73. Myers, S.R. Influence of GSTM1 and NAT2 Genotypes on the Relationship Between Personal Exposure to PAH and Biomarkers of Internal Dose. International Society for Exposure Analysis, November 4–8, 2001, Charleston, South Carolina.

75. Myers, S.R.  Quantitative analysis of Benzo(a)pyrene hemoglobin (Hb) adducts in maternal and fetal blood obtained from smokers and nonsmokers.  International Society for Exposure Analysis, November 4–8, 2001, Charleston, South Carolina.


84. Zhou D. and Song ZH.  CB1 cannabinoid receptor mediates neurite remodeling in mouse neuroblastoma cell N1E-115.  Society for Neuroscience 2001 annual meeting.

85. W. Feng and Z. H. Song.  The role of the DRY motif and A6.34 in the signal transduction of CB2 cannabinoid receptor.  Research!Louisville 2001


VII. Invited Scientific Presentations and Seminars (salaried faculty)

Dr. David Gozal

*Obstructive Sleep Apnea in Children: a Thousand and One Nights of Vulnerability.* Center for Transplantation Immunology Research Seminars, University of Louisville, 3 January 2001, Louisville, KY.

*Neurocognitive Deficits in Obstructive Sleep Apnea: From Cell to Child.* Research Seminar, Tulane Neuroscience Center, 19 March 2001, New Orleans, LA.


*Obstructive Sleep Apnea in Children.* Invited Speaker, International Paediatric Respiratory Congress, 1-4 April, 2001, Prague, Czech Republic.

*Diagnostic Algorithms Describing Respiratory Dysfunction in Pediatric Neuromuscular Diseases.* Invited Speaker, International Paediatric Respiratory Congress, 1-4 April, 2001, Prague, Czech Republic.


*Non-Invasive Ventilation in Chronic Respiratory Failure in Children.* The Diamond Conference, May 11, 2001, Arkansas Children's Hospital, Little Rock, AR.

*Pressure Plateau Home Ventilation: Pros and Cons.* The Diamond Conference, May 11, 2001, Arkansas Children's Hospital, Little Rock, AR.


*OSA in Children: Why Treat?* Invited Speaker, PostGraduate Course on “The Evolving Field of Pediatric Sleep” American Professional Sleep Societies Annual Conference, June 5-10, 2001, Chicago, IL.

*Pediatric Sleep.* Invited Speaker, PostGraduate Course on “Year in Review” American Professional Sleep Societies Annual Conference, June 5-10, 2001, Chicago, IL.


Intermittent Hypoxia and SIDS. Visiting Professor, University of Western Australia, October 9-10, 2001, Perth, Australia.


Neurocognitive Deficits in Obstructive Sleep Apnea in Children. Invited Speaker, 14th Annual Scientific Meeting of the Australasian Sleep Association 12-14 October 2001, Adelaide, Australia.

Baroreceptor Function in Children with Obstructive Sleep Apnea. Invited Speaker, 14th Annual Scientific Meeting of the Australasian Sleep Association 12-14 October 2001, Adelaide, Australia.

Pediatric Respiratory Research: In Quest of New Directions. Visiting Professor, Children's Hospital at Westmead and the University of Sydney, October 15, 2001, Sydney, Australia.


Pediatric OSA: From Cell to Child. Benjamin Burrows Lecture Series, Respiratory Health Sciences Center, University of Arizona, November 29, 2001, Tucson, AZ.
Dr. Evelyne Gozal


**Neuronal Signaling in Hypoxia.** Department of Pediatrics Research Luncheon, University of Louisville, March 12, 2001.

Dr. David W. Hein

**The NAT1 and NAT2 Acetylation Polymorphisms as Modifiers of Breast Cancer Risk from Diet and Smoking.** Department of Pathology and Laboratory Medicine, University of Louisville School of Medicine, Louisville, Kentucky, January 2001.


**Molecular Genetics of NAT1 and NAT2 Acetyltransferases: A Possible Role in Breast Cancer Susceptibility.** Institute of Materia Medica, Chinese Academy of Medical Sciences, Peking Union Medical College, Beijing, China, May 2001.

**Molecular Genetics of NAT1 and NAT2 Acetyltransferases: Relationship to Breast Cancer.** Beijing Institute for Cancer Research, Peking University School of Oncology, Beijing, China, May 2001.


**Molecular Genetics and Function of NAT1 and NAT2: Role in Aromatic Amine Metabolism and Carcinogenesis.** Eighth International Conference on Carcinogenic and Mutagenic N-Substituted Aryl Compounds, Washington, DC, November 2001.
Dr. Y. J. Kang


Metallothionein protection from oxidative myocardial injury. University of Arizona Health Sciences Center, Graduate Program in Pharmacology and Toxicology, October 3, 2001.


Dr. W. Glenn McGregor


Dr. Steven R. Myers

Biomarkers in Epidemiological Research. Center for Genetics and Molecular Medicine, University of Louisville, December 11, 2001.

Dr. William M. Pierce, Jr.


Biomolecule Applications of Mass Spectrometry. University of Louisville College of Arts and Sciences, Department of Chemistry, April 27, 2001.

Teaching a drug to fetch a bone: Bone-targeting for treatment of metastasis? J. Graham Brown Cancer Center July 26, 2001

Dr. Zhao-Hui Song

New insights into the molecular mechanisms of cannabinoids. Institute for Pharmacology and Toxicology, University of Bonn, Bonn, Germany, July, 2001.


Dr. J. Christopher States

VIII. Research Grants and Contracts (salaried faculty)

### Research Grant and Contract Proposals Submitted

<table>
<thead>
<tr>
<th>Dr. Frederick Benz</th>
<th>Agency</th>
<th>Budget Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characterization of vinyl monomer-protein adducts (Co-I; D.E. Nerland, PI)</td>
<td>NIEHS</td>
<td>$475,000</td>
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<tr>
<th>Dr. Theresa Chen</th>
<th>Agency</th>
<th>Budget Requested</th>
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<tr>
<td>N-acetylcysteine therapy in steatohepatitis (Co-I; C.J. McClain, PI) 12/01/01 – 11/30/03</td>
<td>NIEHS</td>
<td>$100,000</td>
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<tr>
<td>NIEHS Training Grant (Mentor; D.W. Hein, PI) 07/01/02 – 06/30/07</td>
<td>NIEHS</td>
<td>$1,123,590</td>
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<tr>
<td>Mechanism of $p$-Aminophenol-induced hepatotoxicity (PI) 04/01/01 – 03/31/05</td>
<td>NIH</td>
<td>$450,000</td>
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<tr>
<td>Nutritional modulation of glutathione status and longevity (PI) 01/01/02 - 12/31/02</td>
<td>Kentucky Science &amp; Technology Corp.</td>
<td>$15,000</td>
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<tr>
<td>S-adenosylmethionine (AdoMet) modulates susceptibility to <em>Pneumocystis carinii pneumonia</em> in immunocompromised hosts (Co-I; Oz, PI) 01/01/02 – 12/31/03</td>
<td>Jewish Hospital Foundation</td>
<td>$50,000</td>
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<thead>
<tr>
<th>Dr. David Gozal</th>
<th>Agency</th>
<th>Budget Requested</th>
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<tbody>
<tr>
<td>Aging, episodic hypoxia, and vagal cardiac projections (Co-I; Z. Cheng, PI) 06/01/02 - 05/31/07</td>
<td>NIH</td>
<td>$1,225,000</td>
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<td>Sleep problems/Patterns in autistic children (Co-I; P.G. Williams, PI) 07/01/02 - 06/30/04</td>
<td>NIH</td>
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<td>Sleep and psychophysiological function in children (Co-I; D. Molfese, PI) 07/01/02 - 06/30/04</td>
<td>NIH</td>
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<td>Cardiac efferents: Circuitry and regeneration (Co-I; Z. Cheng, PI) 07/01/02 - 06/30/04</td>
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<td>Role of vagal afferents in hyperpnea (Co-I; J. Yu, PI) 06/01/02 - 05/31/07</td>
<td>NIH</td>
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<td>Agency</td>
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<tr>
<td><strong>Dr. Evelyne Gozal</strong></td>
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<tr>
<td>PDGF in development of hypoxic ventilatory response (Co-I; D. Gozal (PI) 06/00 – 06/04)</td>
<td>NICHD $969,529</td>
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<tr>
<td><strong>Dr. David W. Hein</strong></td>
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<tr>
<td>Pharmacogenetics of drug and carcinogen metabolism (continuation) (PI) 07/01/01 – 06/30/02</td>
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<td>Molecular epidemiology of environmental/occupational diseases (PI) 07/01/02 - 06/30/07</td>
<td>NIH/NIEHS $1,123,590</td>
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<td>Environmental genomics and molecular epidemiology of lung cancer (PI) 10/01/01 – 09/30/04</td>
<td>Commonwealth of Kentucky Lung Cancer Research Board $300,000</td>
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<td>Effect of acetylator genotype on genotoxicity of aromatic and heterocyclic amines (PI) 04/01/02 – 03/31/05</td>
<td>Philip Morris External Research Program $659,749</td>
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<td>Construction of CHO cells to assess genetic predisposition to aromatic amine mutagenicity (PI) 01/01/02 – 12/31/03</td>
<td>Kentucky Science and Engineering Foundation $230,097</td>
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<td>Pharmacogenetics of drug and carcinogen metabolism (PI) 07/01/02 – 06/30/07</td>
<td>NIH/NCI $2,510,251</td>
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<td>Education in genetic ethics (Co-I; M. Rothstein, PI) 04/01/02 – 03/31/05</td>
<td>NIH $1,509,410</td>
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<td>Mechanism of p-aminophenol-induced hepatotoxicity (Co-I; T.S. Chen, PI) 04/01/02 – 03/31/05</td>
<td>NIH $638,760</td>
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<tr>
<td>Cancer education grant program (Core Faculty N. Burzynski, PI) 05/01/02 – 04/30/07</td>
<td>NIH $557,437</td>
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<td>Cardiovascular toxicity of environmental aldehydes (Co-I; A. Bhatnagar, PI) 07/01/02 – 06/30/07</td>
<td>NIH $7,007,406</td>
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### Dr. David W. Hein (cont.)

<table>
<thead>
<tr>
<th>Project Description</th>
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<tbody>
<tr>
<td>Biomarkers of maternal and fetal tobacco smoke exposure (Co-I; S.R. Myers, PI) 10/01/01 – 09/30/04</td>
<td>Commonwealth of Kentucky Lung Cancer Research Program</td>
<td>$279,048</td>
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<tr>
<td>Genetic analysis of prostate cancer in Nigerian men (Collaborator; B. Folasade Ivun, PI) 01/01/02 – 12/31/02</td>
<td>University of Louisville</td>
<td>$4,000</td>
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<tr>
<td>Hybrid quadrupole-time of flight mass spectrometer (Major user; W.M. Pierce, PI) 04/01/02 – 03/31/03</td>
<td>NIH/NCRR</td>
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<tr>
<td>UofL NIH Center of Excellence of Biocomputing: A Planning Grant (Investigator; A. Faraq, PI) 10/01/01 – 09/30/04</td>
<td>NIH</td>
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<tr>
<td>Metabolism and Detoxification of Base Propenals (Collaborator; S. Srivastava, PI) 04/01/02 – 03/31/06</td>
<td>NIH</td>
<td>$1,152,000</td>
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<tr>
<td>Epidemiologic study of breast cancer in Nashville (Collaborator; W. Zheng, PI)</td>
<td>Department of Defense</td>
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<tr>
<td>Microarray analysis facility at UofL (Major User; W. Zacharias, PI) 04/01/02 – 03/31/07</td>
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<td>Health effects of occupational exposures in PGDP workers (Co-I; David Tollerud, PI) 02/01/02 – 01/31/04</td>
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### Dr. Harrell E. Hurst

<table>
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<tr>
<th>Project Description</th>
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<tr>
<td>Chemoprevention of DMBA-induced mammary cancer (Co-I; S.R. Myers, PI)</td>
<td>Komen Breast Cancer Foundation</td>
<td>$199,600</td>
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<tr>
<td>Mechanisms underlying individual variations in drug responses (Co-I; M.W. Linder, PI)</td>
<td>NIH</td>
<td>$250,000</td>
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<tr>
<td>Biomarkers of maternal and fetal tobacco smoke exposure (Co-I); Steven R. Myers (PI) 04/01/01 – 03/31/04</td>
<td>Kentucky Lung Cancer Research Board</td>
<td>$279,048</td>
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<tr>
<td>Name</td>
<td>Project Description</td>
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<td><strong>Dr. Harrell E. Hurst (cont.)</strong></td>
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<td>Cardiovascular toxicity of environmental aldehydes (Co-I; A. Bhatnagar, PI)</td>
<td>NIH</td>
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<td><strong>Dr. Y. James Kang</strong></td>
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<td>Metallothionein and adriamycin cardiotoxicity (PI)</td>
<td>NIH/NHLBI</td>
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<td>Prevention by metallothionein of chronic liver injury (Co-I; Z. Zhou, PI)</td>
<td>NIH/NIAAA</td>
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<td>Metallothionein prevention of diabetic cardiomyopathy (Co-I; Lu Cai, PI)</td>
<td>NIH/NHLBI</td>
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<td><strong>Dr. Glenn McGregor</strong></td>
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<td>Molecular mechanisms of DNA damage-induced mutagenesis (PI)</td>
<td>NCI</td>
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<td>Development of a molecular gene therapy approach for the prevention of UV-induced skin cancer (PI)</td>
<td>Kentucky Science and Engineering Foundation</td>
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<td>Molecular strategies to avoid mutagenesis by cigarette smoke-associated carcinogens (PI)</td>
<td>Philip Morris External Research Program</td>
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<tr>
<td><strong>Dr. Steven R. Myers</strong></td>
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<td>Biomarkers of maternal and fetal tobacco smoke exposure (PI) 04/01/02 - 03/31/04</td>
<td>Kentucky Science and Engineering Foundation (KSEF)</td>
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<tr>
<td><strong>Dr. Steven R. Myers (cont.)</strong></td>
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<tr>
<td>Chemoprevention of DMBA induced mammary cancer (PI)</td>
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<td>Cardiovascular toxicity of environmental aldehydes (Co-I; A. Bhatnagar, PI) 07/01/02 – 06/30/07</td>
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<tr>
<td><strong>Dr. Donald E. Nerland</strong></td>
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<tr>
<td>Characterization of vinyl monomer-protein adducts (PI)</td>
<td>NIEHS $475,000</td>
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<tr>
<td><strong>Dr. William M. Pierce, Jr.</strong></td>
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<tr>
<td>Hybrid Quadrupole Time-of-Flight Mass Spectrometer (PI) 2002 – 2003</td>
<td>NIH-NCRR SIG $500,000</td>
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<tr>
<td>Cardiovascular Toxicity of Environmental Aldehydes (Co-I; A. Bhatnagar, PI) 07/01/02 – 06/30/07</td>
<td>NIH $7,007,406</td>
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<td>Molecular Adaptation of the Skeletal Muscle Calcium Pump in the Wood Frog (Co-I; W. Dean, PI) 2002-2005</td>
<td>NSF $221,696</td>
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<tr>
<td>DNA Sequences impact Estrogen and Antiestrogen Activity (Co-I; C.M. Klinge, PI) 01/01/03 – 12/31/07</td>
<td>NIH $1,744,218</td>
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<td>Proteomic Analysis of Diabetic Nephropathy (Co-I; J.B. Klein, PI) 2002 - 2004</td>
<td>NIH $200,000</td>
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<tr>
<td>A Proteome Map of Neutrophil Membranes (Co-I; K.R. McLeish, PI) 2002 - 2007</td>
<td>NIH $1,400,000</td>
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<tr>
<td>Arsenic-Induced Mitotic Arrest Associated Apoptosis (Co-I, J.C. States, PI) 07/01/02 - 06/30/07</td>
<td>NIH $1,779,760</td>
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Dr. William M. Pierce, Jr. (cont.)

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<tr>
<td>Molecular Mechanisms of Bone Targeted Estrogens (PI) 2001 – 2006</td>
<td>NIH</td>
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<td>Project: Bone Proteomic Analysis (PI) 2001 – 2002</td>
<td>Nat’l Osteoporosis Foundation</td>
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<tr>
<td>Identification and Characterization of Grape Extract Metabolites (Co-I; C.M. Klinge, PI) 2001-2002</td>
<td>California Table Grape Commission</td>
<td>$25,000</td>
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<td>Molecular Mechanisms of DNA Damage-Induced Mutagenesis (Co-I; W.G. McGregor, PI) 2002 – 2006</td>
<td>NIH</td>
<td>$700,000</td>
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<tr>
<td>Resveratrol Metabolism and Gene Expression (Co-I; C.M. Klinge, PI) 2002-2003</td>
<td>American Institute for Cancer Res.</td>
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<tr>
<td>Endothelium-Derived Hyperpolarizing Factor and Role in Hypertension (Co-I; A. Adeagbo, PI) 2002 - 2005</td>
<td>American Heart Association</td>
<td>$272,242</td>
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Dr. Peter Rowell

Postnatal brain susceptibility to intermittent hypoxia (Co-I; D. Gozal, PI) 03/01/02 – 02/28/07

NIH $1,250,000

Dr. Zhao-Hui (Joe) Song

Structure and function of CB2 cannabinoid receptor, DA11551 (PI) 09/30/98 – 09/30/03

NIH $507,304

Cannabinoid receptors-potential targets for novel antiglaucoma drugs (PI) 07/01/02 – 06/30/07

NIH $1,426,560

Dr. J. Christopher States

Mechanisms of Chemoresistance in Ovarian Cancer (PI) 06/01/01 - 05/31/03

Elsa U. Pardee Foundation $128,418

Candidate genes for the molecular target(s) of arsenite induced mitotic arrest and associated apoptosis (PI) 01/01/02 - 06/30/02

James Graham Brown Cancer Center $4,500
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<th>Project Description</th>
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<td>Characterization of a Potential Cisplatin Sensitivity Factor (PI) 06/01/01 - 08/31/01</td>
<td>ULSoM Dean's Office Medical Student Summer Research Program</td>
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<td>Functional Analysis of Variant DNA Repair Genes (PI) 04/01/02 - 03/31/06</td>
<td>NCI</td>
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<td>Arsenic Induced Mitotic Arrest Associated Apoptosis (PI) 12/01/01 - 11/30/06</td>
<td>NIEHS</td>
<td>$1,645,880</td>
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<tr>
<td>Health Effects of Occupational Exposures in PGDP Workers (Co-I; D. Tollerud, PI) 02/01/02 - 01/31/04</td>
<td>NIOSH</td>
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<tr>
<td>Chromium: How much is too much? (PI) 01/01/02 - 12/31/02</td>
<td>UL RIG</td>
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<tr>
<td>Chromium: How much is too much? (PI) 01/01/02 - 12/31/02</td>
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<td>Arsenic Induced Mitotic Arrest Associated Apoptosis (PI) 07/01/02 - 06/30/07</td>
<td>NIEHS</td>
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<td>Mechanism of Low-dose Arsenic Induced Mitotic Disruption (PI) 01/01/02 -12/31/02</td>
<td>KSEF</td>
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<tr>
<td>Cancer Education Grant Program (Core Faculty; N. Burzynski, PI) 05/01/02 - 04/30/07</td>
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<td>$557,437</td>
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<tr>
<td>Pharmacogenetics of drug and carcinogen metabolism (Co-I; D.W. Hein, PI) 07/01/02 - 06/30/07</td>
<td>NCI</td>
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<td>Metabolism and Detoxification of Base Propenals (Collaborator; S. Srivastava, PI) 04/01/02 – 03/31/06</td>
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**Dr. Leonard C. Waite**

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<tr>
<td>Molecular mechanisms of bone targeted estrogens (Co-I; W.M. Pierce, Jr., PI) 07/01/01 – 06/30/06</td>
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<td>NIH</td>
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Dr. Walter M. Williams

Mechanism of p-Aminophenol-induced hepatotoxicity (PI) 04/01/01 – 03/31/05
# Research Grants and Contracts in Force (salaried faculty)

<table>
<thead>
<tr>
<th>Dr. Frederick W. Benz</th>
<th>Agency</th>
<th>Project Award</th>
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<tbody>
<tr>
<td>Acute acrylonitrile intoxication: Antidotal assessment (PI) 09/01/00 – 08/31/01</td>
<td>NIEHS</td>
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<th>Dr. Theresa S. Chen</th>
<th>Agency</th>
<th>Project Award</th>
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<tbody>
<tr>
<td>Mechanism of p-Aminophenol induced hepatotoxicity (PI) 07/01/01 – 06/30/02</td>
<td>UofL Intramural Research Incentive Grants</td>
<td>$3,668</td>
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<tr>
<td>Acute acrylonitrile intoxication: Antidotal assessment (Co-I; F.W. Benz, PI) 09/01/00 – 08/31/01</td>
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<tr>
<th>Dr. Paul N. Epstein</th>
<th>Agency</th>
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<td>β-cell antioxidant transgenes in diabetes and transplantation (PI) 09/01/00 – 08/31/04</td>
<td>NIH/NIDDK</td>
<td>$712,000</td>
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<td>Reducing diabetic cardiomyopathy by increasing glycolysis (PI) 09/30/00 – 09/29/04</td>
<td>NIH/NHLBI</td>
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<td>Antioxidant transgenes in diabetic cardiomyopathy (PI) 08/01/99 – 07/30/02</td>
<td>NIH/NHLBI</td>
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<td>Acetaldehyde transgenes alter alcoholic cardiomyopathy (PI) 07/01/99 – 06/30/02</td>
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<tr>
<th>Dr. David Gozal</th>
<th>Agency</th>
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<tr>
<td>Neurocognitive function in snoring children (PI) 10/01/99 - 07/31/2003</td>
<td>NHLBI</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Sleep episodic hypoxia and memory deficit in aging rats: Protection by platelet-activating factor antagonists (PI) 01/00-12/02</td>
<td>American Heart Association</td>
<td>$214,500</td>
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<tr>
<td>REM sleep deprivation, hypoxia, and hippocampal function (PI) 09/01/00 -6/30/2004</td>
<td>NHLBI</td>
<td>$900,000</td>
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<tr>
<td>Dr. David Gozal (cont.)</td>
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<tr>
<td><strong>Proteomic analysis of hippocampal hypoxic vulnerability</strong> (Co-I; J.B. Klein, P.I.) 10/01/00 - 06/30/04</td>
<td>NHLBI</td>
<td>$700,000</td>
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<tr>
<td><strong>Sleep Associated Learning Morbidity in 3-4 Year Old Children</strong> (PI) 07/01/01 - 06/30/02</td>
<td>Department of Education</td>
<td>$921,000</td>
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<tr>
<td><strong>Pulse Arterial Tonometry in Sleeping Children</strong> (PI) 08/01/01 - 07/31/03</td>
<td>Itamar Ltd.</td>
<td>$60,000</td>
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<tr>
<td><strong>CPAP vs. BiPAP in Children with OSA</strong> (PI) 10/1/01-9/30/02</td>
<td>ResMed Corporation</td>
<td>$7,800</td>
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<tr>
<td><strong>Postnatal Brain Susceptibility to Intermittent Hypoxia</strong> (PI) 03/01/02 - 02/28/07</td>
<td>NHLBI</td>
<td>$1,250,000</td>
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<tr>
<td><strong>Reversal of Learning Deficits in 3-4 Year Old Children with Obstructive Sleep Apnea</strong> (PI) 07/01/02 - 06/30/03</td>
<td>Department of Education</td>
<td>$500,000</td>
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<table>
<thead>
<tr>
<th>Dr. Evelyne Gozal</th>
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<tbody>
<tr>
<td><strong>Signaling pathways in neuronal susceptibility to hypoxia</strong> (PI) 10/01/00 – 09/30/04</td>
</tr>
<tr>
<td><strong>Proteomic analysis of hippocampal hypoxic vulnerability</strong> (Co-I; Jon B. Klein, PI) 10/01/00 – 09/30/04</td>
</tr>
<tr>
<td><strong>Postnatal brain susceptibility to intermittent hypoxia</strong> (Co-I; D. Gozal, PI) 03/01/02 – 02/28/07</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Dr. David W. Hein</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacogenetics of drug and carcinogen metabolism</strong> (PI) 09/01/97 – 06/30/02</td>
</tr>
<tr>
<td><strong>Metabolic basis of sulfonamide toxicity in AIDS patients</strong> (P.I. on subproject) 09/01/97 – 05/31/01</td>
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<tr>
<td>Agency</td>
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<td>---------------------------------------------</td>
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<tr>
<td>NCI</td>
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<tr>
<td>Commonwealth of Kentucky Lung Cancer Research Board</td>
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<tr>
<td>USEPA</td>
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<tr>
<td>Kentucky Department of Environmental Sciences</td>
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<tr>
<td>NIEHS</td>
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<tr>
<td>Jewish Hospital Foundation</td>
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<tr>
<td>Jewish Hospital Foundation</td>
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</tbody>
</table>

**Dr. David W. Hein (cont.)**

Pharmacogenetics of drug and carcinogen metabolism (minority supplement) (PI) 12/01/00 – 06/30/02

Environmental genomics and molecular epidemiology of lung cancer (PI) 10/01/01 – 09/30/03

**Dr. Harrell E. Hurst**

Biomarkers for air pollutants (PI) 10/01/01 – 09/30/03

Review of records, procedures, and analytical data for measurement of volatile organic compounds using EPA method TO-15A (Co-I; R. Barnett, PI) 07/01/00 – 06/30/02

Acute acrylnitrite intoxication: Antidotal assessment (Co-I; F.W. Benz, PI) 09/01/00 – 08/31/01

**Dr. Y. James Kang**

Metallothionein and adriamycin cardiotoxicity (PI) 04/01/99 – 03/31/02

Oxidative stress and heart failure by copper deficiency (PI) 04/01/01 – 03/31/05

Cardiomyopathy induced by marginal copper deficiency (Co-I; D. Schuschke, PI) 11/15/01 – 11/14/03

Metallothionein and adriamycin cardiomyopathy (PI) 04/01/99 – 03/31/01

Alpha dependent myocyte apoptosis (PI) 04/01/00 – 03/31/02
### Dr. Y. James Kang (cont.)

<table>
<thead>
<tr>
<th>Project</th>
<th>Agency</th>
<th>Project Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallothionein protection against diabetic cardiomyopathy (Co-I; Lu Cai, PI) 11/01/01 – 10/31/03</td>
<td>Jewish Hospital Founcaction</td>
<td>$50,000</td>
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</table>

### Dr. Glenn McGregor

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<thead>
<tr>
<th>Project</th>
<th>Agency</th>
<th>Project Award</th>
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<tbody>
<tr>
<td>Mechanisms of mutagenic processing of DNA damage, CA 73984 (PI) 08/01/97 – 07/31/02</td>
<td>NCI</td>
<td>$350,000</td>
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<tr>
<td>Mechanisms of BPDE-induced mutagenesis and mutation avoidance (PI) 10/01/01 – 09/30/03</td>
<td>Kentucky Lung Cancer Research Program</td>
<td>$150,000</td>
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<tr>
<td>DNA replication proteins as potential therapeutic targets (PI) 03/01/01 – 02/28/02</td>
<td>University of Louisville School of Medicine</td>
<td>$15,000</td>
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### Dr. Steven R. Myers

<table>
<thead>
<tr>
<th>Project</th>
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<th>Project Award</th>
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<tbody>
<tr>
<td>Characterization of polycyclic aromatic hydrocarbons and their metabolites in urine samples (PI) 07/01/01 – 06/30/02</td>
<td>USEPA</td>
<td>$50,000</td>
</tr>
<tr>
<td>In utero and postnatal tobacco smoke exposure and its effect on infant lung function and respiratory illness (Co-I); George Rodgers (PI) 01/01/95 – 12/31/02</td>
<td>Alliant Community Trust</td>
<td>$204,890</td>
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<tr>
<td>Biomarkers for air pollutants: Development of hemoglobin adduct methodology for assessment of exposure to butadienes and polycyclic aromatic hydrocarbons (Co-I; H.E. Hurst, PI) 10/01/01 – 09/30/03</td>
<td>Kentucky EPSCoR Program</td>
<td>$753,654</td>
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### Dr. Donald E. Nerland

<table>
<thead>
<tr>
<th>Project</th>
<th>Agency</th>
<th>Project Award</th>
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</thead>
<tbody>
<tr>
<td>Acute acrylonitrile intoxication: Antidotal assessment (Co-I; F.W. Benz, PI) 09/01/00 – 08/31/01</td>
<td>NIEHS</td>
<td>$20,179</td>
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<tr>
<td>Project Description</td>
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<tr>
<td>Proteomic analysis of hippocampal hypoxic vulnerability (Co-I; J.B. Klein, PI) 2000-2004</td>
<td>NIH</td>
<td>$1,000,800</td>
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<tr>
<td>Central nervous system injury and repair (Co-I; S. Whittemore, PI) 2000-2004</td>
<td>NIH</td>
<td>$8,500,000</td>
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<tr>
<td>Evolution of a pheromone signaling system: From molecules to mating (Co-I; L. Houck, Richard C. Feldhoff, PI) 07/15/01 - 07/14/04</td>
<td>NSF-Subcontract to UofL from Oregon State University.</td>
<td>$700,546</td>
</tr>
<tr>
<td>Blood Lead Monitoring (Lab Director) 01/01/02 – 12/31/02</td>
<td>Analytical chemistry service for local and regional medical practitioners</td>
<td>$32,000</td>
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<tr>
<td>Regulation of Neutrophil Activation (Collaborator; K. McLeish, PI) 1999-2002</td>
<td>VA Merit Review</td>
<td>$407,000</td>
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<tr>
<td>Toxicity and Detoxification of 4-hydroxyalkenals in Heart (Co-I; A. Bhatnagar, PI) 2000-2004</td>
<td>NIH</td>
<td>$1,220,000</td>
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<tr>
<td>Estrogens: Bone Blood Flow and Bone Mechanical Properties (Collaborator; J.T. Fleming, PI) 1999 - 2001</td>
<td>NIH</td>
<td>$50,000</td>
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<tr>
<td>Cardioprotective effects of ethanol (Co-I; A. Bhatnagar, PI) 2002-2003</td>
<td>NIH</td>
<td>$143,000</td>
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<tr>
<td>Regulatory Kinase Signal Transduction Pathways in Human Neutrophils (Co-I; K.R. McLeish, PI) 2000-2002</td>
<td>American Heart Association - Ohio Valley</td>
<td>$89,300</td>
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<tr>
<td>Mechanisms of Chemoresistance in Ovarian Cancer (Co-I; J.C. States, PI) 2001-2003</td>
<td>Elsa Pardee Foundation</td>
<td>$128,418</td>
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<tr>
<td>Gene Expression of Persistent Chlamydia (Co-I; J.T. Summersgill, PI) December 2001 – November 2006</td>
<td>NIH</td>
<td>$1,200,000</td>
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### Dr. William M. Pierce, Jr. (cont.)

<table>
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<tr>
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<tr>
<td>Veterans Administration</td>
<td>$464,500</td>
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Analysis of PTH and Dopamine Receptor Signalling in Proximal Tubules (Co-I; Eleanor Lederer, PI) August 2001 - July 2005

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### Dr. Peter P. Rowell

<table>
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<tr>
<td>NIH</td>
<td>$299,508</td>
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Functional activity of mesolimbic nicotinic receptors (PI) 09/01/99 – 06/30/02

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<tbody>
<tr>
<td>NIH</td>
<td>$819,469</td>
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Effects of self-administered versus noncontingent nicotine (Co-I; A.R. Caggiula, PI) 10/01/00 – 09/30/05

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<tbody>
<tr>
<td>Virginia Commonwealth</td>
<td>$23,503</td>
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</table>

The neuromolecular and neurochemical basis of nicotine’s variable effects on behavior (Consultant; J.A. Rosecrans, PI) 06/01/01 – 05/31/04

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### Dr. Zhao-Hui (Joe) Song

<table>
<thead>
<tr>
<th>Agency</th>
<th>Project Award</th>
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<tbody>
<tr>
<td>NIH</td>
<td>$507,304</td>
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Structure and function of CB2 cannabinoid receptor, DA11551 (PI) 09/30/98 – 09/30/03

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### Dr. J. Christopher States

<table>
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<td>NIEHS</td>
<td>$862,845</td>
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DNA Damage by Bioactivated Xenobiotics (PI) 03/01/97 - 06/30/02

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<tbody>
<tr>
<td>Elsa U. Pardee Foundation</td>
<td>$128,418</td>
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Mechanisms of Chemoresistance in Ovarian Cancer (PI) 06/01/01 - 05/31/03

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<tr>
<th>Agency</th>
<th>Project Award</th>
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<tr>
<td>ULSoM Dean's Office Medical Student Summer Research Program</td>
<td>$2,800</td>
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Characterization of a Potential Cisplatin Sensitivity Factor (PI) 06/01/01 - 08/31/01

<table>
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<tbody>
<tr>
<td>NCI</td>
<td>$1,859,936</td>
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</table>

Pharmacogenetics of drug and carcinogen metabolism 09/01/97 - 06/30/02 (Co-I; David W. Hein, PI)
IX. Teaching

School of Medicine

The Department team-taught the Medical Pharmacology course to second year medical students. Dr. Mike Williams served as course director. In addition, Dr. Laurence Carr served as co-director of the interdisciplinary Clinical Neuroscience course. Individual faculty contributions are identified in the Appendix.

School of Dentistry

The Department team-taught the Dental Pharmacology and Therapeutics course to second year dental students. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

The Department team-taught a Pharmacology course to second year students in the Dental Hygiene Program. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

School of Nursing

The Department team-taught a Basic Pharmacology for Nursing course to second year nursing students. The course is also cross-listed as Biology 390 and is taken by other undergraduate students. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

The Department team-taught an Advanced Pharmacology course to graduate nursing students. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

Graduate School

The Department team-taught several courses for graduate students. The individual courses and course directors were as follows:

- Principles of Drug Action (Dr. Frederick Benz)
- Research Methods (Dr. Chris States and Dr. Joe Song)
- Pharmacology Seminar (Dr. Donald Nerland)
- Introduction to Environmental Health (Dr. Steve Myers)
- Frameworks in Environmental Science and Technology (Dr. Steve Myers)

Individual faculty contributions to these courses are identified in the Appendix.

X. Service
Faculty provided service to the Department, the School of Medicine, the University of Louisville, the profession, the nation, and the community in many ways. Individual faculty service activities are identified in the Appendix.

XI. Honors and Awards

Graduate Students

Hainan Chen received a Center for Genetics and Molecular Medicine Fellowship.

Denise Clark received a second place award in graduate student competition at Research!Louisville.

Paul Porter received a first place award in graduate student research competition at the Ohio Valley Society of Toxicology. He was appointed student representative for the chapter.

Xin Fu received a graduate student travel award from the Society of Toxicology to present her research at the annual meeting in San Francisco.

Faculty

Larry Carr retired and was appointed Professor Emeritus.

Theresa Chen completed a successful periodic career review.

Paul Epstein was appointed as University Scholar.

David Gozal was keynote speaker at the 14th annual scientific meeting of the Australasian Sleep Association

David Hein was reappointed Distinguished University Scholar and received the third place research award in the category of "Potential for Major Clinical Applications" at Research!Louisville.

James Kang was promoted to Professor and received the first place award in the category of "Extramural Funding" at Research!Louisville.

William Pierce was selected as the School of Medicine's nominee for the University of Louisville Outstanding Service Award and was a finalist for a research award in the category of "Interdisciplinary collaborative research" at Research!Louisville.

Janice Sullivan was promoted to Associate Professor of Pediatrics.
XII. Standing Committees

Graduate Program Committee
Dr. William Pierce (Chair)
Dr. Peter Rowell (2003)
Dr. Chris States (2002)
Dr. Len Waite (2001)
Scot Payne/April Hartford (student representatives)

PBSI/Grievance Committee
Dr. Peter Rowell (Chair)
Dr. Mike Williams (2003)
Dr. Don Nerland (2002)
Dr. Harrell Hurst (2001)

Teaching Evaluation Committee
Dr. Larry Carr/Dr. Mike Williams (Chair)
Dr. Len Waite (2002)
Dr. Fred Benz (2001)

Seminar Committee
Dr. Don Nerland (Chair)
Dr. Evelyne Gozal (2003)
Dr. Fred Benz (2002)
Dr. Steve Myers (2001)

Core Laboratories/Research Development Committee
Dr. Chris States (Chair)
Dr. Steve Myers (2003)
Dr. Glenn McGregor (2002)
Dr. Theresa Chen (2001)

Ad hoc Technology Committee
Dr. Harrell Hurst (Chair)
Dr. Fred Benz